

## ABSTRACT OF THE DISCLOSURE

**[0047]** A method and apparatus for sensing attributes of reflected signals in an optical fiber sensing system is provided. In one embodiment, a method for sensing in an optical fiber sensing system comprising an interrogator coupled to a Bragg grating sensor by an optical cable includes the steps of producing a first optical signal, coupling the first optical signal to an optical cable, receiving a first reflected signal from a Bragg grating sensor within the optical cable, resolving a wavelength of first reflected signal, producing a second optical signal, coupling the second optical signal to the optical cable, receiving a second reflected signal caused by Brillouin backscattering within the optical cable, and resolving a difference in frequencies between the second optical signal and second reflected signal. Embodiments of the method and apparatus are particularly useful for sensing temperature and strain in hazardous locations such as down hole gas and oil field applications and the like.